

## NEW FINDINGS OF *LUTRARIA ANGUSTIOR* PHILIPPI, 1844 AND *LUTRARIA OBLONGA* (GMELIN, 1791) (MOLLUSCA, BIVALVIA) IN THE EASTERN ADRIATIC SEA

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This paper provides literature review data for *Lutraria angustior* Philippi, 1844 and *Lutraria oblonga* (Gmelin, 1791) in the eastern Adriatic Sea as well as new findings for this species. One bivalve specimen of *L. angustior* from the area of Vrulja (between Omiš and Makarska) was collected by I. Bilopavlović, one subfossil specimen and two single shells were collected by Đ. Igljić in Novsko ždrilo. D. Marguš found shells of *L. oblonga* at the river Krka mouth, Ž. Krstinić three living specimens in the vicinity of Rab Island, and Đ. Igljić two subfossil specimens in Ljubač Strait.

Key words: Bivalves, *Lutraria angustior*, *Lutraria oblonga*, Adriatic Sea

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Ovaj rad iznosi literaturne podatke za *Lutraria angustior* Philippi, 1844 i *Lutraria oblonga* (Gmelin, 1791) u istočnom dijelu Jadranskog mora, a navode se i novi nalazi ovih vrsta. Jedan primjerak školjkaša *L. angustior* u području Vrulja (između Omiša i Makarske) sakupio je I. Bilopavlović, a jedan subfosilni primjerak i dvije pojedinačne ljuštore Đ. Igljić u Novskom ždrilu. U ušću rijeke Krke D. Marguš nalazi ljuštore *L. oblonga*, Ž. Krstinić tri živa primjerka u području otoka Raba, a Đ. Igljić dva subfosilna primjerka u Ljubačkim vratima.

Ključne riječi: školjkaši, *Lutraria angustior*, *Lutraria oblonga*, Jadransko more

The area of the eastern Adriatic Sea is inhabited by two species from the genus *Lutraria* Lamarck, 1799: *Lutraria angustior* Philippi, 1847 = *L. elliptica* sensu Lamarck, 1818, non Lamarck, 1801 and *Lutraria oblonga* (Gmelin, 1791) = *L. magna* (da Costa, 1778). The locations of previous and recent findings are marked in Fig. 1.

### *Lutraria angustior* Philippi, 1847

For the region of Dalmatia and the surroundings of Zadar (Novigrad) BRUSINA (1862, 1866, 1891) mentioned the species *L. elliptica* Lamarck with no indication of the year. His manuscript list from 1862 cited the same species without author under the number 5399. ILIJANIĆ & STOŠIĆ (1972) in their mollusca list of the S. Brusina collection (Croatian Natural History Museum, Zagreb) also mentioned the species *L. elliptica* Lamarck without any indication of the year. By later review (LEGAC, 2003) these specimens, previously listed as *L. elliptica*, were identified as the species *L. angustior* Philippi. In the Brusina collection there are 7 specimens from the loca-



**Fig. 1.** Map with findings of *Lutraria angustior* Philippi, 1844 (live specimens ▲, shells △) and *Lutraria oblonga* (Gmelin, 1791) (live specimens ■, shells □) in the eastern Adriatic Sea.

tion Novigrad, one of which, sized 98.7/53.0 mm, was found alive (Inv. No. 2758). The size (length/height) of the other specimens ranged from 86.2/35.0 to 119.8/60.3 mm (LEGAC, 2003). The data cited indicated the first findings of *L. angustior* for the eastern Adriatic Sea. According to BRUSINA (1891) this species was rare for the Novigrad area, living specimens in particular. Additional records of this species were reported for Novigrad Sea and Karin Sea by PEHARDA-ULJEVIĆ *et al.* (2008). These three closely situated localities are marked and labelled as Novigrad in Fig. 1.

The malacological collection in the Natural History Museum Rijeka is in possession of a specimen of *L. angustior* with partly preserved periostracum sized 116.4/56.7 mm (Inv. No. 1549, Fig. 2). It was collected by Ivo Bilopavlović, by SCUBA-diving, at Vrulja (a cove between Omiš and Makarska) from a 14 m deep sandy sea bottom in August 1995 (LEGAC, 2012). The area is abundant in fresh-water springs («vrulja»). RADIĆ (1982) in his check list of benthic animals mentioned the species *L. lutraria* (Linnaeus) for the area of Makarska littoral, but it was probably incorrectly identified.

In May 2012 Đani Igljić (Zadar) donated to the Rijeka museum one subfossil specimen and two subfossil *L. angustior* valves collected by SCUBA-diving in 2011 in Novsko ždrilo at the depth of 28 m on a sandy-muddy bottom. The length of the damaged specimen is over 120.6 mm, and the sizes of the valves are 125.2/62.6 and 129.0/67.0 mm. Previously, Igljić had dug out several living specimens at the same locality; the valves are kept in his collection. This species lives in clusters in a sandy and muddy bottom, buried between 5 to 10 cm deep (IGLIĆ, pers. comm.).



Fig. 2. *Lutraria angustior* Philippi, 1844. Malacological Collection of Natural History Museum Rijeka – Inv. No. 1549 (Photo: L. Bartoniček).



Fig. 3. *Lutraria oblonga* (Gmelin, 1791). Malacological Collection of Natural History Museum Rijeka – Inv. No. 2536 (Photo: L. Bartoniček).

The specimens are identified as *L. angustior* according to HOLME (1959), TEBBLE (1966) and POUTIERS (1987).

DE MIN (2000) recorded *L. angustior* in the Piran area (Slovenia) as the first finding for the Adriatic Sea. However, considering the earlier citations of Brusina, this finding is only a new one for the northern part of the eastern Adriatic coast. According to SCHIAPARELLI (2008), the Bivalvia check-list for the Italian seas has not recorded the presence of any *Lutraria* species for the western Adriatic.

POPPE & GOTO (2000) mentioned that *L. angustior* lives in sand, sand-mud or gravel bottoms down to 55 m, from the English Channel to Guinea, West Africa, possible also in South Africa and in the Mediterranean. According to COSTELLO *et al.* (2008) *L. angustior* is also distributed more northerly still (British Isles, Belgian part of the North Sea.)

### *Lutraria oblonga* (Gmelin, 1791)

BRUSINA (1862, 1865, 1866) cited the species *L. oblonga* Gmelin for Novigrad and the region of Dalmatia. In the manuscript list BRUSINA (1862) noted *L. solenoids* under the number of 5398. According to SABELLI *et al.* (1990) *L. (Psammophilina) magna* (Da Costa, 1778) [*Chama*] was a synonym of *L. solenoides* Lamarck, 1801. ILIJANIĆ & STOŠIĆ (1972) found in the Brusina collection (Zagreb Museum) one

specimen marked as *L. oblonga* Chmn. (under the number 548, Inv. No. 2755) collected in Novigrad locality in 1879. LEGAC (2003) named this specimen *L. magna* (Da Costa, 1778), today known with the valid name *L. oblonga* (Gmelin, 1791) (COSTELLO *et al.*, 2008). The finding location of Novigrad was also mentioned by STOSSICH M. (1880).

In the malacological collection Rijeka there is a single *L. oblonga* valve sized 120.1/58.0 mm collected by Drago Marguš in the Krka mouth in 1988, from the depth of 25 m on a muddy-sandy bottom (LEGAC, 2012), and donated to the museum in 2009. According to MARGUŠ (1998) *L. lutraria* (Linnaeus, 1758) [*Mya*] was found at the mouth of the Krka. However, although the description and the drawing match *L. lutraria* the attached photograph does not, for it showed the species *L. magna* = *L. oblonga*, as the valve was identified by LEGAC (2012) according to HOLME (1959), TEBBLE (1966) and POUTIERS (1987).

Several empty *L. magna* valves were found in Maloston Bay by PEHARDA-ULJEVIĆ (2003), as well as several empty shells in Kaštela Bay (mouth of the Jadro and Barbarinac), and in the Cetina estuary (PEHARDA *et al.*, 2010). It is presumed that in these cases the authors found *L. oblonga*.

In 2009 three live specimens of *L. oblonga* were caught by a trammel net or »poponica« off the sandy bottom in Miral cove next to Boljkovac cliff (Rab Island) at the depth of 10 m. Two specimens were broken while the net was being dragged. The complete valve specimen sized 120.8/57.5 mm (Inv. No. 2536, Fig. 3), was donated to the museum by Žarko Krstinić. This is the first finding of *L. oblonga* for the sublittoral of Rab and for the northern Adriatic (LEGAC, 2012).

Dani Igljić found by SCUBA-diving two subfossil specimens in Ljubač Strait on a sandy bottom at the depth of 45 m, in 2011, and the next year donated them to Rijeka museum. The sizes of the specimens are 78.3/40.5 and 117.8/52.5 mm.

The distribution of the mentioned species is from the southwest of the British Islands south to Senegal, West Africa and South Africa, and into the Mediterranean (POPPE & GOTO, 2000). They live in sand, sand-mud and gravel, buried between 10 and 40 cm deep, from below tide line to the depth of at least 30 m (POPPE & GOTO, 2000). According to COSTELLO *et al.* (2008) the species spreads even further north (British Isles, Belgian part of the North Sea).

According to POUTIERS (1987) *L. angustior* and *L. magna* = *L. oblonga* are distributed in the Mediterranean including the Adriatic Sea, but finding locations were not given. MILIŠIĆ (1991) claimed that *L. lutraria* (Linnaeus, 1758) = *L. elliptica* Lamarck, 1801 is spread along the whole Adriatic. PEHARDA-ULJEVIĆ (2003) identified one empty shell of *L. lutraria* in Mali Ston bay. However, since this specimen is not available it is not possible to confirm whether it was in fact *L. lutraria* or another species of the genus *Lutraria*. The other published data as well as the data from rechecked specimens from the Brusina collection (Zagreb) and the identified specimens from the malacological collection in Natural History Museum Rijeka do not indicate the presence of *L. lutraria* in the Adriatic Sea. MILIŠIĆ (1991) also stated that *L. magna* = *L. oblonga* is distributed throughout the Adriatic, without indicating any finding locations. SCHIAPARELLI (2008) did not list the species *L. angustior*, *L. lutraria* and *L. oblonga* for the area of the Italian coast of the Adriatic Sea.

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## SAŽETAK

### Novi nalazi *Lutraria angustior* Philippi, 1844 i *Lutraria oblonga* (Gmelin, 1791) (Mollusca, Bivalvia) u istočnom dijelu Jadranskog mora

M. Legac

Prema literaturnim podacima i novim nalazištima, u području istočnog dijela Jadranskog mora obitavaju dvije vrste roda *Lutraria*: *Lutraria angustior* Philippi i *Lutraria oblonga* (Gmelin). Vrste nisu zabilježene za zapadni dio talijanske obale.

Nove nalaze *L. angustior* Philippi bilježimo na dva lokaliteta. Jedan primjerak veličine 116,4/56,7 mm (dužina/visina) je autonomnim ronjenjem u području Vrulja sakupio I. Bilopavlović sa dubine od 14 m na pjeskovitom dnu. Autonomnim ronjenjem u Novskom ždrilu Đ. Igljić, sakupio je oštećen subfosilni primjerak čija dužina prelazi 120,6 mm i dvije subfosilne ljuštore veličine 125,2/62,6 i 129,0/67,0 mm. Dubina nalaza iznosi 28 m, dno pjeskovito – muljevito.

Školjkaš *L. oblonga* (Gmelin) nađen je na tri nova lokaliteta. U ušću rijeke Krke (Nacionalni park Krka), D. Marguš nalazi ljuštore, te jednu veličine 120,1/58,0 mm s muljevito – pjeskovitog dna i dubine od 25 m donira muzeju. Tri živa primjerka ulovljena su mrežom poponicom u uvali Miral kod hridi Boljkovac (otok Rab) na 10 m dubine i pjeskovitom dnu. U zbirci je pohranjen jedan primjerak veličine 120,8/57,5 mm kojeg je živog sakupio Ž. Krstinić (Palit, otok Rab). Povlačenjem mreže dva živa primjerka su se razbila. Autonomnim ronjenjem u Ljubačkim vratima, Đ. Igljić sakupio je dva subfosilna primjerka veličine 78,3/40,5 i 117,8/52,5 mm na 45 m dubine i pjeskovitom dnu.

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